



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
STEVEN M. HANSEN, ET AL.

APPLICATION NO.:
10/809,470

FILED:
MARCH 25, 2004

FOR:
**POLYESTERS CONTAINING MICROFIBERS,
AND METHODS FOR MAKING AND USING SAME**

GROUP ART UNIT:
1796

EXAMINER:
IRINA ZEMEL

ATTORNEY DOCKET NO.:
AD 7006 USNA

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In the Non-Final Office Action mailed on March 19, 2008, the Examiner rejected Claims 1-8, 11-13, and 30-31 under 35 U.S.C. § 103(a) as being obvious over Philippoz *et al.* (WO 02/083794 A2; hereinafter "Philippoz PCT") and further rejected Claims 9-10 and 32 under 35 U.S.C. § 103(a) as being obvious over Philippoz in view of Vercesi *et al.* (U.S. Patent No. 6,068,922; hereinafter "Vercesi"). The International Publication Date of Philippoz PCT is October 24, 2002. The U.S. counterpart application to Philippoz PCT is U.S. Patent Application No. 09/833,456 (hereinafter "Philippoz US"), published on December 12, 2002, as U.S. Patent Application Publication No. 2002/0187291.

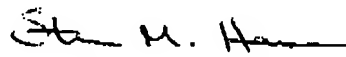
We declare that the presently claimed invention was reduced to practice in the United States prior to the publication date of Philippoz PCT (October 24, 2002) and Philippoz US (December 12, 2002). Further to this declaration, we attach signed notebook pages, with dates redacted, that demonstrate conception (Exhibit 1) and exemplify the reduced to practice invention (Exhibit 2).

As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I

also declare that all statements were made with knowledge that willful false statements, and the like, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and any such willful false statements may jeopardize the validity of either the patent application or any patent issuing thereon.

Respectfully Submitted,

 9/2/03

Steven M. Hansen

Date

Sam Luis Samuels

Date

Richard Allen Hayes

Date

Arnold Francis

Date

Exhibit 1

TITLE New Product/Process Concept

DATE [REDACTED]

E 101615- 98

PURPOSE Document idea

Sam L Samuels
[REDACTED]

SEND INFO TO TBLISS
EMAIL: TBLISS@POTTERANDERSON.CO
PHONE: 778-6173
[REDACTED] 7/17/0

To: Arnie Frances/AE/DuPont@DuPont
cc: Megan A OBrien/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont
Subject: Re: Kevlar in PET resins

The specific concept I had proposed here was to mill/produce Kevlar® nanopulp in ethylene glycol and use this material as monomer feed to the polymerizer, thus directly incorporating the pulp in the resultant resin. The well dispersed nanopulp, even at low loadings, ought to improve some property of the resin (e.g. scratch, impact, fatigue resistance), making it a premium product for niche markets. This is not the same thing as putting Kevlar® pulp into PET resins by traditional methods - although there might be some value in that too.

For either option, I suggest that you are the correct contact in AFS. If there's anything I can do to facilitate the interaction between Crystal® (P&IP) and AFS, please let me know.

Regards,
Sam

Megan A OBrien

Megan A OBrien
[REDACTED]

NO WRITING UNDER INSERT

To: Arnie Frances/AE/DuPont@DuPont
cc: Sam L Samuels/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont, Megan A OBrien/AE/DuPont@DuPont
Subject: Kevlar in PET resins

Hi Arnie,

My name is Megan O'Brien and I'm the Market Development Manager in Crystal(R) polyester resins. I also lead the top line growth through innovation for our business and just held an idea session last week.

Sam Samuels was in the meeting and he said you're interested in finding places where you can sample Kevlar(R) particles with other base polymers. At present, we can incorporate Teflon(R) and Surllyn(R) particles into our PET resins and I wanted to see if there was an opportunity to do the same with Kevlar(R).

I've copied our Technology Manager, Ken Atwood, on the note and Sam said he would be interested in helping if he could as well.

Appreciate your thoughts.

Megan O'Brien
440-877-0788

EXPERIMENTER [Signature]

DATE [REDACTED]

WITNESSED BY [Signature]

DATE [REDACTED]

Exhibit 2

D-289

Best Available Copy

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: Author: HANSEN Cost Code: 844-051 DRT: 2-018-1
Object of Test: PET W/ 0.05% K₂CO₃
Operator (8-4): (4-12): W. Suggs (12-8): L. S.

MONOMER CYCLE

Patrol	Test Limits																			
Batch Temp.	240°		1700	2000	2100	2200	2300													
Bot. Col.			45	170	178	220	230													
Top Col.			53	133	140	191	185													
Drop Line			27	90	82	107	101													
Drop Valve			28	157	122	111	201													
MeOH Rec. Level	600		29	150	113	107	282													
2G Rec. Level	500		0	0	3000	4800	000													
Still Dow Vent			30	21	31	21	81													
			225	227	280	277	280													

	DMT	2C	KF-8 Cat.	Ingredients Added NO.	Inhibitor	Time 1900	Ingredients Removed		
Time	1900	1900	1900			Test Ingredients	MeOH	2C	
Amount	40 #	26 #	42.6 GR			26 W/Kevlar (1853)	5400	2235	
						1 #		500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty..... (check).

AUTOCLAVE CYCLE

Patrol	Test Limits																			
Batch Temp.	220°		2250	2350	2450	2550														
Clave Pressure			268	272	280	279														
Agitator RPM			D.T.	D.T.	D.T.	2.2														
Air Pressure			12	12	12	3														
Ext. Valve			37	27	27	20														
Ext. Nozzle			270	280	280	288														
Vapor Take-off			290	291	291	291														
Clave Dow Vent			294	292	298	297														
Vapor Take-off Flange			296	303	302	304														
			298	302	305	304														
			286	293	293	292														

Valve to Instr. Line Closed..... (check). Time Extrusion started 0.135; completed 0.230

Total Polymer Extruded..... Cut Make 36.0 lbs Waste 2.2 lbs

Sample No's: Beginning..... RV..... Middle..... RV..... End..... RV..... Dashed RV.....

Time RUNNING LOG

1900 Chopped still and firing heat on.
2130 Read out point on still, to help MeOH to come off.
2210 Mark stop again, off, switched to 2G cycle.
2235 2G cycle completed, preparing to drop batch to Clave.
2250 Batch in Clave, started agit. and D.T.
2110 Air pressure at 35 PSI, lowered agitator to 8 RPM
2120 Air pressure at 35 PSI, lowered agitator to 6 RPM.
2125 Air pressure at 30 PSI, lowered agitator to 3 RPM
2130 Air pressure at 20 PSI, preparing to heat batch
2230 Completed gassing batch, Clave draining, sample to lab.
2240 Blew heel, blew Cold Traps, put Clave under vac.
2255 Charged 30 lbs of 2G for CBO, set agitator at 17 RPM, took partial
2315 Extended CBO, blew Cold Traps, put Clave under vac.
2315 Checked leak rate at 14.4 mm/hr.
2324 0.2% AS-4
2340 Batch 2A 5411 out from Clave

POLYMER BATCH UNIT

Date Started: Author: HANSEN Cost Code: 8414-0511 D.R.T. 2-018-2Object of Test: P51 W/ 0.05% KEVLAROperator (84): (4-12) W. Segg (128) L.S.

MONOMER CYCLE

Patrol	Test Limits																			
Batch Temp.			0635	0735	0835	0915														
Bot. Col.			56	175	191	226														
Top Col.			56	179	164	146														
Drop Line			54	87	111	91														
Drop Valve			288	246	236	292														
MeOH Rec. Level			268	246	267	238														
2C Rec. Level			0	1350	520	855														
Still Dow Vent			0	0	0	50														
Clave Batch			31	30	31	31														
			271	279	277	219														

RP-8				Ingredients Added		26 W/ KEVLAR (1.85%)	Ingredients Removed	
	DMT	2G	Co.	TIO.	Inhibitor	Test Ingredients	MeOH	2G
Time	0630	0630	0630			0630	0955	0915
Amount	40 lbs	26 lbs	42.6 CL			1 lbs	6100	500

Time Batch dropped to Clave: Press. on empty clave: mm Hg. in min.MeOH Receiver valve OPEN when vessel is empty: (check).

AUTOCLAVE CYCLE

Patrol	Test Limits																			
Batch Temp.			0930	1030	1130	1215														
Clave Pressure			264	271	279	279														
Agitator RPM			DT	DT	DT	2.6														
Air Pressure			12	12	12	3														
Ext. Valve			27	27	26	21														
Ext. Nozzle			280	280	279	279														
Vapor Take-off			251	251	291	290														
Clave Dow Vent			282	290	296	285														
Vapor Take-off Flange			281	289	304	272														
			291	289	303	310														
			283	289	294	288														

Valve to Instr. Line Closed: (check). Time Extrusion started: 1230; completed: 1320Total Polymer Extruded: 30.0 Cut Flake: 27.4 Waste: 2.6Sample No's.: Beginning: , RV: , Middle: , RV: , End: , RV: , Desired RV:

Time

RUNNING LOG

0630 Changed ingredients to still, turned on heat, took patrol.
 0730 Batch in still on mon cycle
 0835 mon cycle complete, precess temp at 213°C with switch to 2G cycle
 0915 2G cycle complete, preparing to drop batch to Clave.
 0930 Batch in Clave. Started D.T. and Agitator took patrol Heat OFF Still
 1150 Air Pressure at 35 PSI. I checked AGI SAGI TO 9 KPS
 1210 Air Pressure at 35 PSI. I checked AGI SAGI TO 6 KPS
 1210 Air Pressure at 30 PSI. I checked AGI SAGI TO 3 KPS
 1215 Air Pressure at 21 PSI. I checked AGI TO 1 PSI. PREPARING TO EXHAUST
 1320 Completed casting Batch Clave draining.
 1420 blew Hot & Cold Traps, Clave under VAC. had problem closing VAPOR line Valve.
 1430 changed Clave to Clave
 1645 Extruded R.V. blew cold traps & put Clave under Vols. (BU cooling)
 1840 Checked hot plate @ 4-8 min/hr

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 8444051 D.R.T. 2-019-1

Object of Test: PET w/ 0.12% KEVLAR

Operator (8-4) W. Suggs (4-12) L.S. (12-8) L.S.

MONOMER CYCLE

Patrol	Test Limits																			
			1900	2000	2100	2250														
Batch Temp.			44	169	193	226														
Bot. Col.			36	129	170	174														
Top Col.			27	74	111	92														
Drop Line			262	233	242	288														
Drop Valve			223	202	201	239														
MeOH Rec. Level			0	0	4800	08														
2C Rec. Level			0	0	0	500														
Still Dow Vent			31	30	31	31														
			279	278	277	280														

	DMT	2C	KP-8 Cat.	Ingredients Added TIO	Inhibitor	2C w/ KEVLAR (1.370) Test Ingredients	Ingredients Removed MeOH	2C
Time	1900	1900	1900			1900	2135	
Amount	40 lb	26 lb	42.6 lb			2.2 lb	62.00	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty..... (check).

AUTOClave CYCLE

Patrol	Test Limits																			
			2200	2300	2400	2450														
Batch Temp.			269	277	278	279														
Clave Pressure			0.7	0.7	0.7	2.7														
Agitator RPM			12	12	12	3														
Air Pressure			27	28	28	22														
Ext. Valve			280	280	280	280														
Ext. Nozzle			290	291	290	281														
Vapor Take-off			285	294	292	297														
Clave Dow Vent			285	301	291	300														
Vapor Take-off Flange			294	301	296	301														
			287	291	287	290														

Valve to Instr. Line Closed..... (check). Time Extrusion started 0055; completed 0200

Total Polymer Extruded..... Cut Flake 31.8 162 Waste -1.5 162

Sample No's: Beginning..... RV..... Middle..... RV..... End..... RV..... Desired RV.....

Time

RUNNING LOG

1900	Charged still & turned heat on
2135	Monomer cycle completed, awaiting 2C cycle
2150	2C cycle completed, preparing to drop batch to Clave
2200	Batch in Clave, started agit. and D.T.
0025	Air pressure at 35 PSI, lowered agitator to 8 RPM
0035	Air pressure at 35 PSI, lowered agitator to 6 RPM
0045	Air pressure at 30 PSI, lowered agitator to 3 RPM
0050	Air pressure at 22 PSI, preparing to extend batch
0200	Completed pasting batch, Clave draining
0315	Completed blowing feed, blowing cold traps, and puffing Clave under vac.
0330	Charged 30 lb of 2C for CBO, agit. at 12 RPM, tank vented.
0445	Extended CBO, blew cold traps, Ext Clave under vac.
0600	Checked leak rate at 9.6 mm/hr.

POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 844-0251 DRT: 2-09-2

Object of Test PET W/ 0.1% KEVLAR

Operator (84) L446 (4-12) (12-8) L.S.

MONOMER CYCLE

[illegible]

AP-7				Ingredients Added		2G NY (1.852)		Ingredients Removed	
	DMT	2G	Cat.	TIO.	Inhibitor	Test Ingredients	MeOH	2G	
Time	0620	0620	0620			0620	0820	0825	
Amount	40 lbs	26 lbs	426 lbs			2.2 lbs	1000	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOClave CYCLE

Potrol	Test Limits						CBo							
Batch Temp.			084/5	094/5	104/5	1130		1470						
Clave Pressure			264	271	277	278		286						
Agitator RPM			DT	DT	DT	26								
Air Pressure			12	12	12	3		12						
Ext. Valve			29	28	17	20								
Ext. Nozzle			280	280	280	280		280						
Vapor Take-off			290	290	290	290		290						
Clave Dow Vent			270	280	294	285		285						
Vapor Take-off Flange			282	285	281	280		285						
			280	294	298	288		287						

Valve to Instr. Line Closed..... (check), Time Extrusion started 11:30; completed 12:30

Total Polymer Extruded 30.0 Out Flake 28.5 Waste 1.5

Sample No's.: Beginning RV Middle RV End RV Desired RV

4KV / 6.97

Index

RUNNING LOG

0620	Changed ingredients to Spill
0625	Turned on agit and heat, took Patrols
0830	MEDH cycle Comp - Switched to 25 cycle
0835	25 cycle Comp. Preparing to Dose Agitate
0845	Batch in close - Started DT. Started agitator @ 12 RPM.
1100	Process @ 35 PSI, Lowered to 8 RPM's.
1120	Process @ 35 PSI, Lowered to 6 RPM's
1125	Process @ 30 PSI, Lowered to 3 RPM's
1130	Process @ 20 PSI, Preparing to Extend Batch
1135	Comp Cooling, Open Draining.
1310	Stop DT & Heat. Close under Vap.
1430	Close 30" 25 to close for CSD, agitator @ 12 RPM.
1530	Extended CSD, Stop DT. Close under Vap.
1720	Checked tank rate @ 8.0 m ³ /hr.

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [redacted] Author: HARRIS Cost Code: 941-0471 DRT: 2-020-1
Object of Test: PET W/ 0.57 KEV LAR
Operator (84): [redacted] (4-12) W. Suggs (12-8) L.S.

MONOMER CYCLE

Patrol	Test Limits	1800	1900	2000	2100						
Batch Temp.		47	174	196	206						
Bot. Col.		48	147	177	153						
Top Col.		44	87	129	101						
Drop Line		277	246	255	292						
Drop Valve		289	223	228	240						
MeOH Rec. Level		0	500	5800	8FF						
EC Rec. Level		0	0	0	500						
Still Dow Vent		31	30	31	31						
		281	277	277	277						

Kp-8				Ingredients Added		JG W/ Kevlar (2.272)	Ingredients Removed	
	DMT	2G	Ca	NO.	Inhibitor	Test Ingredients	MeOH	2G
Time	1800	1800	1800			1800	2005	2020
Amount	40#	26#	42.6 g.			8.8 lbs	6200	500

Time Batch dropped to Clavo Press. on empty clavo mm Hg, in. min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOClave CYCLE

[illegible]

Valve to Instr. Line Closed... (check). Time Extrusion started 2310; completed 2400

Total Polymer Extruded	Out Flake	26.8 lbs	Waste
------------------------	-----------	----------	-------

Sample No's: Beginning EV Middle EV End EV Desired EV

RUNNING LOG

1800	Charged still and Turbul put on.
2005	Most comp. switched to 2G cycle.
2020	2G cycle comp. preparing to charge batch to chve.
2025	Batch in chve started agit cal. RT.
2245	Air pressure @ 35 PST. Lowered agit. to 8 RPM.
2300	Air pressure @ 35 PST. Lowered agit. to 6 RPM.
2305	Air pressure @ 30 PST. Lowered agit. to 3 RPM.
2310	Air pressure @ 20 PST. Preparing to extend batch.
2400	Completed casting batch. Clave draining.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
STEVEN M. HANSEN, *ET AL.*

APPLICATION NO.:
10/809,470

FILED:
MARCH 25, 2004

FOR:
**POLYESTERS CONTAINING MICROFIBERS,
AND METHODS FOR MAKING AND USING SAME**

GROUP ART UNIT:
1796

EXAMINER:
IRINA ZEMEL

ATTORNEY DOCKET NO.:
AD 7006 USNA

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In the Non-Final Office Action mailed on March 19, 2008, the Examiner rejected Claims 1-8, 11-13, and 30-31 under 35 U.S.C. § 103(a) as being obvious over Philippoz *et al.* (WO 02/083794 A2; hereinafter "Philippoz PCT") and further rejected Claims 9-10 and 32 under 35 U.S.C. § 103(a) as being obvious over Philippoz in view of Vercesi *et al.* (U.S. Patent No. 6,068,922; hereinafter "Vercesi"). The International Publication Date of Philippoz PCT is October 24, 2002. The U.S. counterpart application to Philippoz PCT is U.S. Patent Application No. 09/833,456 (hereinafter "Philippoz US"), published on December 12, 2002, as U.S. Patent Application Publication No. 2002/0187291.

We declare that the presently claimed invention was reduced to practice in the United States prior to the publication date of Philippoz PCT (October 24, 2002) and Philippoz US (December 12, 2002). Further to this declaration, we attach signed notebook pages, with dates redacted, that demonstrate conception (Exhibit 1) and exemplify the reduced to practice invention (Exhibit 2).

As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I


Ser. No. 10/809,470
Docket No. AD7006 USNA

also declare that all statements were made with knowledge that willful false statements, and the like, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and any such willful false statements may jeopardize the validity of either the patent application or any patent issuing thereon.

Respectfully Submitted,

Steven M. Hansen

Date


Sam Louis Samuels

8/18/2008

Date

Louis

Richard Allen Hayes

Date

Arnold Francis

Date

Exhibit 1

TITLE New Product/Process Concept

DATE [Redacted]

E 101615- 98

PURPOSE Document idea

Sam L Samuels

SEND INFO TO TBLISS
EMAIL: TBLISS@POTTERANDERSON.CO
PHONE: 778-6173 825 7/17/0

To: Arnie Frances/AE/DuPont@DuPont
cc: Megan A OBrien/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont
Subject: Re: Kevlar in PET resins

The specific concept I had proposed here was to mill/produce Kevlar® nanopulp in ethylene glycol and use this material as monomer feed to the polymerizer, thus directly incorporating the pulp in the resultant resin. The well dispersed nanopulp, even at low loadings, ought to improve some property of the resin (e.g. scratch, impact, fatigue resistance), making it a premium product for niche markets. This is not the same thing as putting Kevlar® pulp into PET resins by traditional methods -- although there might be some value in that too.

For either option, I suggest that you are the correct contact in AFS. If there's anything I can do to facilitate the interaction between Crystar® (P&IP) and AFS, please let me know.

Regards,
Sam

Megan A OBrien

Megan A OBrien

To: Arnie Frances/AE/DuPont@DuPont
cc: Sam L Samuels/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont, Megan A OBrien/AE/DuPont@DuPont
Subject: Kevlar in PET resins

Hi Arnie,

My name is Megan O'Brien and I'm the Market Development Manager in Crystar(R) polyester resins. I also lead the top line growth through innovation for our business and just held a ridea session last week.

Sam Samuels was in the meeting and he said you're interested in finding places where you can sample Kevlar(R) particles with other base polymers. At present, we can incorporate Teflon(R) and Surlyn(R) particles into our PET resins and I wanted to see if there was an opportunity to do the same with Kevlar(R).

I've copied our Technology Manager, Ken Atwood, on the note and Sam said he would be interested in helping if he could as well.

Appreciate your thoughts.

Megan O'Brien
440-877-0788

NO WRITING UNDER INSERT

EXPERIMENTER

[Signature]

DATE

[Redacted]

WITNESSED BY

[Signature]

DATE

[Redacted]

Exhibit 2

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Object of Test PET w/ 0.05% K₂Cr₂O₇

Operator (8-4) (4-12) *AL. Suggs* (12-8) *L. S.*

MONOMER CYCLE

Patrol	Test Limits		1700	2000	2100	2200	2235						
Batch Temp.	240°		45	170	178	220	230						
Bot Col.			53	133	140	194	185						
Top Col.			27	90	82	107	101						
Drop Line			28	157	122	111	201						
Drop Valve			29	150	113	107	292						
MeOH Rec. Level	6200		0	0	3000	4800	0.95						
SG Rec. Level	500		0	0	0	0	500						
Still Dow Vent			30	31	31	31	81						
			229	222	280	277	280						

KP-8				Ingredients Added		(Time: 1900)	Ingredients Removed	
DMT	2C	Cat	NO.	Inhibitor	Test Ingredients		MeOH	2C
Time	1900	1900	1900					
Amount	40 #	26 #	42.6 G			26 W / Acetone (1853)	220	225
Time Batch dropped to Clean						1 #	5400	500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MoOH Receiver valve OPEN when vessel is empty. (check).

AUTOCCLAVE CYCLE

Patrol	Test Limits												
Batch Temp.	2.80°	2250	1350	0050	0130		0355						
Clave Pressure		268	272	280	279		265						
Agitator RPM		D.T.	D.T.	D.T.	2.2		—						
Air Pressure		12	12	12	3		125						
Ext. Valve		37	27	27	20		—						
Ext. Nozzle		250	280	280	284		280						
Vapor Take-off		290	291	291	291		290						
Clave Dow Vent		284	292	298	297		296						
Vapor Take-off Flange		296	303	302	304		298						
		294	302	305	304		292						
		286	293	293	292		294						

Valve to Instr. Line Closed..... (check). Time Extrusion started 0.135; completed 0.230

Total Polymer Extruded _____ Cut Flake 36.0 lbs Waste 2.1 lbs

Sample No's: Beginning RV Middle RV End RV Desired RV

RUNNING LOG

Time	RUNNING LOG
1900	Changed still and began heat on.
2130	Reared set point on still to allow Machine to come off.
2220	Machine stop again off switched to 2g cycle.
2235	2g cycle completed, preparing to begin batch to close.
2250	Batch in close, started agit. and RT.
0110	Air pressure at 55 PSI, lowered agitator to 8 RPM.
0120	Air pressure at 55 PSI, lowered agitator to 6 RPM.
0125	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0130	Air pressure at 20 PSI, preparing to start batch.
0230	Completed astring batch, Close draining, sample to lab.
0240	Blew heel, blew Cold Traps, put Close under vac.
0555	Changed to 16s of 2g for CRO, set agitator at 12 RPM, took partial.
0515	Extended CRO, blew Cold Traps, put Close under vac.
0615	Checked leak rate at 14.4 mmpm.
0820	9:20 AM 8:7
0840	Batch 1A still on 8 RPM cycle.

POLYMER BATCH UNIT

Date Started: [redacted] Author: HANSEN Cost Code: 8414-02511 D.R.T. 2-018-2

Object of Test P51 W/ 0.05% KEVLAR

Operator (8-4) 80 (4-12) W. Segg (12-8) L.S.

MONOMER CYCLE

[illegible]

RP-8				Ingredients Added		2G W/KEVAR (1.5%)		Ingredients Removed	
	DMT	2G	Cat.	TIO.	Inhibitor	Test Ingredients	MeOH	2G	
Time	0630	0630	0630			0630	0955	0915	
Amount	40 lbs	26 lbs	42.6 CL			1 lbs	600	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MoOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

[illegible]

Valve to Instr. Line Closed..... (check). Time Extrusion started 1230: completed 1320

Total Polymer Extruded 30.0 Out Flake 27.4 Waste 2.6

Sample No's: Beginning.....RV.....Middle.....RV.....End.....RV.....Desired RV.....

Time

RUNNING LOG

0635 Charged ingredients to still, turned on heat, took patrol.
= 8:20 G2. AGH
0800 Batch TA Still on main cycle
0855 main cycle complete, process Temp At 213c. will Switch to 26 cycle
0915 26 cycle complete, preparing to drop batch to Clave.
0930 Batch TA Clave. Started D.T. And AGH take took patrol Heat OFF Still
1156 Air Pressure At 35 PSI. Lowered AGH Speed TO 9 RPM'S
1310 Air Pressure At 35 PSI. Lowered AGH Speed TO 6 RPM'S
1210 Air Pressure At 30 PSI. Lowered AGH Speed TO 3 RPM'S
1215 Air Pressure At 21 PSI. Lowered AGH TO ZERO PREPARING TO FILLING
BATCH
1326 Completed Casting Batch Clave DRAINING.
1420 Blew Hot & Cold Traps, Clave Under VAC. had problem closing VAPOR Line Valve.
1435 Charged Ciba TO Clave
1645 Extended R.D. from cold trap & put Clave under VAC. (BU cooling)
1840 Check hot rd to @ 4.8 m/min

"Dacron"® Research Laboratory POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code 8444051 DRT. 2-019-1Object of Test: PET W/ 0.1% KEVLAROperator (8-4) W. S. Saff (4-12) W. S. Saff (12-8) L. S.

MONOMER CYCLE

Patrol	Test Limits												
Batch Temp.			1900	2000	2100	2250							
Bot. Col.			44	169	193	226							
Top Col.			36	129	170	174							
Drop Line			27	74	111	92							
Drop Valve			262	233	242	298							
MeOH Rec. Level			223	202	201	239							
2G Rec. Level			0	0	4800	09							
Still Dow Vent			0	0	0	500							
			31	30	31	31							
			279	278	277	280							

KP-8			Ingredients Added			2G W/ KEVLAR (1.37%) Ingredients Removed		
Time	DMT	2G	Cat.	TIO	Inhibitor	Test Ingredients	MeOH	2G
Amount	1900	1930	1900			1900	2135	
	40 F	36 F	42.6 GR			2.2 F	62.00	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty..... (check).

AUTOCLAVE CYCLE

Patrol	Test Limits												
Batch Temp.			2200	2300	2400	0050							
Clave Pressure			269	277	278	279	270						
Agitator RPM			0.5	0.5	0.5	2.7	—						
Air Pressure			12	12	12	3	12						
Ext. Valve			27	28	28	22	—						
Ext. Nozzle			280	280	280	280	281						
Vapor Take-off			290	291	290	291	291						
Clave Dow Vent			285	294	292	297	291						
Vapor Take-off Flange			285	301	291	300	274						
			294	301	296	301	294						
			287	271	287	290	284						

Valve to Instr. Line Closed..... (check). Time Extrusion started 0.055; completed 0.200Total Polymer Extruded..... Cut Flake 31.8 162 Waste -1.5 162

Sample No's.: Beginning..... RV..... Middle..... RV..... End..... RV..... Desired RV.....

Time RUNNING LOG

1900	Changed still & turned heat on.
2135	Monomer cycle completed, switched to 2G cycle.
2150	2G cycle completed, preparing to drop batch to Clave.
2200	Batch in Clave, started agit. and D.T.
0025	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0035	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0045	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0050	Air pressure at 22 PSI, preparing to extend batch.
0200	Completed pasting batch, Clave draining.
0305	Completed blowing feed, blowing cold traps, and puffing Clave under vac.
0330	Changed 30 ml of 2G for CBO, agt. at 12 rpm, back control.
0445	Extended CBO, blew cold traps, put Clave under vac.
0600	Checked leak rate at 9.6 mm/hr.

"Dacron"* Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HAUSEN Cost Code: PH-0251 DRT: 2-019-2
Object of Test: PET W/ 0.1% KEYLAR
Operator: (8-4) RHS (4-12) (12-8)

MONOMER CYCLE

[illegible]

AP-8				Ingredients Added		2G 4/11/92 (1.853)		Ingredients Removed	
	DMT	2G	Cat	TIO.	Inhibitor	Test Ingredients		MeOH	2G
Time	0620	0620	0620			0620		0820	0825
Amount	40 g.	26 g.	426 g.			2.2 lbs		1000	500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. to..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Laminar						CBC				
Batch Temp.			0845	0945	1045	1130		1430			
Clave Pressure			264	271	277	278		286			
Agitator RPM			DT	DT	DT	26					
Air Pressure			12	11	12	3		12			
Ext. Valve			29	28	17	20					
Ext. Nozzle			280	240	280	250		200			
Vapor Take-off			290	260	290	290		290			
Clave Dow Vent			270	28	294	295		285			
Vapor Take-off Flange			202	295	311	300		265			
			280	294	294	298		287			

Valve to Instr. Line Closed..... -- (check), Time Extrusion started 11:30; completed 12:30

Total Polymer Extruded: 30.0 Cut Flakes: 28.2 Waste: 1.8

Sample No's.: Beginning RV Middle RV End RV Desired RV

Time RUNNING LOG

0620 Changed ingredients to Shell
0625 Turned on agit and heat, tank Patrol,
0830 MCH cycle Comp. Switched to 2G cycle,
0835 2G cycle Comp. Preparing to Dye Agitator,
0845 Batch in class - Started DT. Started agitator @ 12 RPM.
1105 Pressure 35 PSI, Lowered to 8 RPM's.
1120 Pressure 35 PSI, Lowered to 6 RPM's.
1125 Pressure 30 PSI, Lowered to 3 RPM's.
1130 Pressure 29 PSI, Preparing to Expand Batch
1230 Comp. Cooling, Class draining.
1310 Stop CT. & Heat. Class under Vap.
1430 Chg 30" 2G to class for 080, agitator @ 12 RPM.
1530 Added CSO, Stop CT. Class under Vap.
1720 Checked leak rate @ 8.0 m.u./hr.

Object of Test PET W/ 0.5% KENLAK

Operator (84) _____ (4-12) W. Suggs (12-8) L.S.

Operator (8-4) (4-12) (12-8)

Patrol	Test Limits	1800	1900	2000	2100					
Batch Temp.		47	174	196	206					
Bot. Col.		48	147	177	153					
Top Col.		44	97	129	101					
Drop Line		277	246	255	292					
Drop Valve		289	223	228	240					
MeOH Rec. Level		0	500	5800	855					
EC Rec. Level		0	0	0	500					
Still Dow Vent		31	30	31	31					
		281	277	277	277					

Kp-8				Ingredients Added		26W/Kevlar (2.27)	Ingredients Removed	
	DMT	2G	Cc	TI0.	Inhibitor	Test Ingredients	MeOH	2G
Time	1800	1800	1800			1800	2005	2020
Amount	40#	26#	42.6 cc.			8.8 lbs	6200	500

Time Batch dropped to Clavo..... Press. on empty clavo..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

[illegible]

Valve to Instr. Line Closed ☒ (check). Time Extrusion started 2310; completed 2400.

Total Polymer Extruded _____ Cut Flake 26.8 165 Waste _____

Sample No's: Beginning RV Middle RV End RV Desired RV

RUNNING LOG

Time	RUNNING LOG
1900	Charged still and turned heat on.
2005	Most cook comp. switched to 2G cycle.
2020	2G cycle comp. preparing to purge batch to churn.
2025	Batch in churn started agit. and AT.
2245	Min. pressure @ 35 PSI, lowered agit. to 8 RPM.
2300	Min. pressure @ 35 PSI, lowered agit. to 6 RPM.
2305	Min. pressure @ 30 PSI, lowered agit. to 3 RPM.
2310	Min. pressure @ 20 PSI, preparing to extend batch.
2400	Completed cooking batch. Plant draining.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
STEVEN M. HANSEN, *ET AL.*

APPLICATION NO.:
10/809,470

FILED:
MARCH 25, 2004

FOR:
POLYESTERS CONTAINING MICROFIBERS,
AND METHODS FOR MAKING AND USING SAME

GROUP ART UNIT:
1796

EXAMINER:
IRINA ZEMEL

ATTORNEY DOCKET NO.:
AD 7006 USNA

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In the Non-Final Office Action mailed on March 19, 2008, the Examiner rejected Claims 1-8, 11-13, and 30-31 under 35 U.S.C. § 103(a) as being obvious over Philippoz *et al.* (WO 02/083794 A2; hereinafter "Philippoz PCT") and further rejected Claims 9-10 and 32 under 35 U.S.C. § 103(a) as being obvious over Philippoz in view of Vercesi *et al.* (U.S. Patent No. 6,068,922; hereinafter "Vercesi"). The International Publication Date of Philippoz PCT is October 24, 2002. The U.S. counterpart application to Philippoz PCT is U.S. Patent Application No. 09/833,456 (hereinafter "Philippoz US"), published on December 12, 2002, as U.S. Patent Application Publication No. 2002/0187291.

We declare that the presently claimed invention was reduced to practice in the United States prior to the publication date of Philippoz PCT (October 24, 2002) and Philippoz US (December 12, 2002). Further to this declaration, we attach signed notebook pages, with dates redacted, that demonstrate conception (Exhibit 1) and exemplify the reduced to practice invention (Exhibit 2).

As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I

Ser. No. 10/809,470
Docket No. AD7006 USNA

also declare that all statements were made with knowledge that willful false statements, and the like, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and any such willful false statements may jeopardize the validity of either the patent application or any patent issuing thereon.

Respectfully Submitted,

Steven M. Hansen

Date

Sam Luis Samuels

Date



Richard Allen Hayes

8/12/2008
Date

Arnold Francis

Date

Exhibit 1

TITLE New Product/Process Concept

DATE [REDACTED]

E 101615- 98

PURPOSE Document idea

Sam L Samuels
[REDACTED]

SEND INFO TO TBLISS
EMAIL: TBLISS@POTTERANDERSON.CO
PHONE: 778-6173 8/8 7/17/0

To: Arnie Frances/AE/DuPont@DuPont
cc: Megan A OBrien/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont
Subject: Re: Kevlar in PET resins

The specific concept I had proposed here was to mill/produce Kevlar® nanopulp in ethylene glycol and use this material as monomer feed to the polymerizer, thus directly incorporating the pulp in the resultant resin. The well dispersed nanopulp, even at low loadings, ought to improve some property of the resin (e.g. scratch, impact, fatigue resistance), making it a premium product for niche markets. This is not the same thing as putting Kevlar® pulp into PET resins by traditional methods -- although there might be some value in that too.

For either option, I suggest that you are the correct contact in AFS. If there's anything I can do to facilitate the interaction between Crystal® (P&IP) and AFS, please let me know.

Regards,
Sam

Megan A OBrien

Megan A OBrien
[REDACTED]

To: Arnie Frances/AE/DuPont@DuPont
cc: Sam L Samuels/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont, Megan A OBrien/AE/DuPont@DuPont
Subject: Kevlar in PET resins

Hi Arnie,

My name is Megan O'Brien and I'm the Market Development Manager in Crystal(R) polyester resins. I also lead the top line growth through innovation for our business and just held an idea session last week.

Sam Samuels was in the meeting and he said you're interested in finding places where you can sample Kevlar(R) particles with other base polymers. At present, we can incorporate Teflon(R) and Surlyn(R) particles into our PET resins and I wanted to see if there was an opportunity to do the same with Kevlar(R).

I've copied our Technology Manager, Ken Atwood, on the note and Sam said he would be interested in helping if he could as well.

Appreciate your thoughts.

Megan O'Brien
440-877-0788

NO WRITING UNDER INSERT

EXPERIMENTER

[Signature]

DATE

[REDACTED]

WITNESSED BY

[Signature]

DATE

[REDACTED]

Exhibit 2

D-289

"Dacron" Research Laboratory POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 844-001 D.R.T. 2-018-1

Object of Test: PET W/ 0.05% Kevlar

Operator (8-4): W. Sugg (4-12): W. Sugg (12-8): L. S.

MONOMER CYCLE

Patrol	Test Limits	1700	2000	2100	2200	2235					
Batch Temp.	210°	45	170	178	220	230					
Bot. Col.		53	133	140	194	185					
Top Col.		27	90	82	107	101					
Drop Line		28	157	122	111	201					
Drop Valve		29	150	113	107	292					
MeOH Rec. Level	600	0	0	3000	4800	0.99					
2G Rec. Level	500	0	0	0	0	500					
Still Dow Vent		30	31	31	31	81					
		215	277	290	277	280					

	DMT	2C	KP-8 Cat.	Ingredients Added	Time 1900	Ingredients Removed
Time	1900	1900	1900	TIO, Inhibitor	Test Ingredients	MeOH 2C
Amount	40 #	26 #	42.6 GR		26.0 / Kevlar (1.85%) 1 #	2200 2235
						5400 500

Time Batch dropped to Clave..... Press on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty..... (check).

AUTOClave CYCLE

Patrol	Test Limits	2250	2350	2050	0150	0355					
Batch Temp.	220°	268	272	280	279	265					
Clave Pressure		0.7	0.7	0.7	2.2	---					
Agitator RPM		12	12	12	3	72					
Air Pressure		37	27	27	20	---					
Ext. Valve		280	280	280	280	280					
Ext. Nozzle		290	291	291	291	290					
Vapor Take-off		284	292	298	297	276					
Clave Dow Vent		296	303	302	304	282					
Vapor Take-off Flange		298	302	305	304	292					
		286	293	293	292	274					

Valve to Instr. Line Closed..... (check). Time Extrusion started 0.135; completed 0.230

Total Polymer Extruded..... Cut Flake 30.0 lbs Waste 2.2 lbs

IV .583

Sample No's: Beginning..... RV..... Middle..... RV..... End..... RV..... Desired RV.....

Time RUNNING LOG

1900	Charged still and turn heat on.
2130	Reached set point on still, to help MeOH to come off.
2210	Mark stop again, off, switched to 2G cycle.
2235	2G cycle completed, preparing to drop batch to Clave.
2250	Batch in Clave, started agit. and D.T.
0110	Air pressure at 35 PSI, lowered agitator to 8 RPM
0120	Air pressure at 35 PSI, lowered agitator to 6 RPM
0125	Air pressure at 30 PSI, lowered agitator to 3 RPM
0130	Air pressure at 20 PSI, preparing to heat batch
0230	Completed gassing batch, Clave draining sample to lab.
0240	Blew keel, blew Cold Traps, put Clave under vac.
0315	Charged 30 lbs of 2G for CBO, set agitator at 12 RPM, took patrol
0515	Extended CBO, blew Cold Traps, put Clave under vac.
0615	Checked leak rate at 14.4 mm/Hr.
0724	0.27 1.85%
0800	Batch ID 54111 out for check

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 844-0811 DRT: 2-011-2

Object of Test P51 w/ 0.05% KEVLAR

Operator (84) 840 (4-12) W. Suggs (12-8) 1.5

MONOMER CYCLE

[illegible]

RP-8				Ingredients Added		26 W/KEVLAR (1.53)		Ingredients Removed	
	DMF	2G	Ca.	TiO ₂	Inhibitor	Test Ingredients	MeOH	2G	
Time	0630	0630	0630			0630	0935	0915	
Amount	40 lbs	26 lbs	42.6 G			1 lbs	6100	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCCLAVE CYCLE

[illegible]

Valve to Instr. Line Closed..... (check). Time Extrusion started 1230; completed 1320

Total Polymer Extruded 36.0 Out Flake 22.4 Waste 2.6

Sample No's: Beginning RV Middle RV End RV Desired RV

Three

RUNNING LOG

0635 Charged ingredients to still, turned on heat, took patrol.
= 8:20 82. BPH
0820 Batch TA Still on moon cycle
0855 moon cycle complete, process Temp At 213c will switch to 26 cycle
0915 26 cycle complete, preparing to drop batch to clave.
0930 Batch TA clave. Started D.T. And A9 take took patrol Heat OFF Still
1150 Air Pressure At 35 PSI. Lowered Air Speed TO 9 LPM'S
1210 Air Pressure At 35 PSI. Lowered Air Speed TO 6 LPM'S
1210 Air Pressure At 30 PSI. Lowered Air Speed TO 3 LPM'S
1215 Air Pressure At 21 PSI. Lowered Air TO 1 LPM. PREPARING TO EVACUATE
BATCH
1320 Completed Casting Batch Clave DRAINING.
1420 Blow Hot & Cold Taps, Clave Under VAC. had problem closing VAPOR line Valve.
1430 Charged Ciba TO clave
1645 Extended R.D. Blow cold Taps & put clave under Vacs. (BU cooling)
1840 Check leak rate @ 4.8 m/hour

D-289

"Dacron" Research Laboratory POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 8114051 DRT: 2-019-1Object of Test: PET w/ 0.1% KevlarOperator (8-4): W. Suggs (412): W. Suggs (128): L.S.

MONOMER CYCLE

Patrol	Test Limits																			
			1900	2000	2100	2250														
Batch Temp.			44	169	193	226														
Bot. Col.			36	129	170	174														
Top Col.			27	74	111	92														
Drop Line			262	233	292	288														
Drop Valve			223	202	201	239														
MeOH Rec. Level			0	0	4800	0.0														
2C Rec. Level			0	0	0	500														
Still Dow Vent			31	30	31	31														
			279	228	277	280														

	DMT	2C	KP-8 Cat.	Ingredients Added	2C w/ Kevlar (1.5%)	Ingredients Removed														
				TIO ₂	Inhibitor	Test Ingredients	MeOH	2C												
Time	1900	1930	1900			1900	2135													
Amount	40 F	26 F	42.6 G			2.2 F	62.00													

Time Batch dropped to Clave: Press. on empty clave: mm Hg. in min.MeOH Receiver valve OPEN when vessel is empty: (check).

AUTOClave CYCLE

Patrol	Test Limits																			
			2200	2300	2400	0050														
Batch Temp.			269	277	298	279														
Clave Pressure			0.7	0.7	0.7	2.7														
Agitator RPM			12	12	12	3														
Air Pressure			27	28	28	22														
Ext. Valve			280	280	280	280														
Ext. Nozzle			290	291	290	291														
Vapor Take-off			285	294	292	297														
Clave Dow Vent			285	301	291	300														
Vapor Take-off Flange			294	301	296	301														
			287	291	287	290														

Valve to Instr. Line Closed: (check). Time Extrusion started: 0055; completed: 0200Total Polymer Extruded: Cut Flake: 31.8 162 Waste: 1.5 162Sample No's.: Beginning: RV: Middle: RV: End: RV: Desired RV:

Time

RUNNING LOG

1900	Charged still & turned heat on.
2135	Mix cycle completed, switched to 2C cycle.
2150	2C cycle completed, preparing to drop batch to Clave.
2200	Batch in Clave, started agit. and D.T.
0025	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0035	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0045	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0050	Air pressure at 22 PSI, preparing to extend batch.
0200	Completed pasting batch, Clave draining.
0315	Completed blowing feed, blowing cold traps, and puffing Clave under vac.
0330	Charged 30 kg of 2C for CBO, agit. at 12 RPM, temperature.
0445	Extended CBO, blown cold traps, put Clave under vac.
0600	Checked leak rate at 9.6 mm/hr.

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HAUSEN Cont Code: 944-0251 DRT 2-09-2

Object of Test PET w/ 0.1% KEVLAR

Operator (8-4) L434 (4-12) L.S. (12-8) L.S.

MONOMER CYCLE

[illegible]

AP-8				Ingredients Added		2G MYNAR (LPS)		Ingredients Removed	
	DMT	2G	Cat	TIO	Inhibitor	Test Ingredients		MeOH	2G
Time	0620	0620	0620			0620		0820	0825
Amount	40 g	26 g	426 g			2.2 lbs		1000	500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Laminar							680			
Batch Temp.			084/5	094/5	104/5	1130		1430			
Clave Pressure			264	271	277	278		286			
Agitator RPM			DT	DT	DT	26					
Air Pressure			12	12	12	3		12			
Ext. Valve			29	28	17	20					
Ext. Nozzle			280	280	280	280		280			
Vapor Take-off			290	290	290	290		290			
Clave Dow Vent			270	280	294	285		285			
Vapor Take-off Flange			282	285	281	300		285			
			280	294	298	288		287			

Valve to Instr. Line Closed....., -- (check), Time Extrusion started... 11:30 : completed 12:30

Total Polymer Extruded 30.0 Out Flake 28.2 Waste 1.8

Sample No's.: Beginning RV Middle RV End RV Desired RV

4KV / 6.97

Time

RUNNING LOG

0620	Changed coordinates to 5111
0625	Toward pin light and back track Pastoral.
0820	MOON cycle Comp. Switched to 2G cycle!
0835	2G cycle Comp. Preparing to Drop Antide
0845	Bird in Claw - Started DT. Started agitation @ 12 RPM.
1105	Process @ 35 PSI, Lowered to 8 RPM's.
1120	Process @ 35 PSI, Lowered to 6 RPM's
1125	Process @ 30 PSI, Lowered to 3 RPM's
1130	Process @ 20 PSI, Preparing to Expand Bird
1220	Comp Conting. Claw draining.
1320	Slow CT & Hand. Claw under Vap.
1430	Claw 30" 2G to Claw to 000, agitation @ 12 RPM.
1530	Expanded 000, Slow CT. Claw under Vap.
1720	Check back note @ 8.0 m/s/hr.

Operator (84) (4-12) *W. Sugg* (12-8) *L.S.*

Patrol	Test Limits	1800	1900	2000	2120
Batch Temp.		47	174	196	206
Bot Col.		48	147	177	153
Top Col.		44	87	129	101
Drop Line		277	246	255	292
Drop Valve		289	223	228	240
MeOH Rea. Level		0	500	5800	855
2C Rea. Level		0	0	0	500
Still Dow Vent		31	30	31	31
		281	277	277	277

Kp-8				Ingredients Added		JG W/K-VLAR (2-27-72)	Ingredients Removed	
	DMT	2G	Cat	TIO.	Inhibitor	Test Ingredients	MeOH	2G
Time	1800	1800	1800			1800	2005	2020
Amount	40#	26#	42.6 ea.			8.8 lbs	6200	500

MeOH Receiver valve OPEN when vessel is empty.....(check).

[illegible]

Sample No's: Beginning RV Middle RV End RV Desired RV

1900	Charged still and turned hot on.
2005	Moist. cycle comp. switched to 2G cycle.
2020	2G cycle comp. preparing to charge batch to churn.
2025	Batch in churn started agit. cal. RT.
2245	Air pressure @ 35 PSI. Lowered agit. to 8 RPM.
2300	Air pressure @ 35 PSI. Lowered agit. to 6 RPM.
2305	Air pressure @ 30 PSI. Lowered agit. to 3 RPM.
2310	Air pressure @ 20 PSI. Preparing to extend batch.
2400	Completed cooking batch. Clara draining.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
STEVEN M. HANSEN, *ET AL.*

APPLICATION NO.:
10/809,470

FILED:
MARCH 25, 2004

FOR:
POLYESTERS CONTAINING MICROFIBERS,
AND METHODS FOR MAKING AND USING SAME

GROUP ART UNIT:
1796

EXAMINER:
IRINA ZEMEL

ATTORNEY DOCKET NO.:
AD 7006 USNA

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In the Non-Final Office Action mailed on March 19, 2008, the Examiner rejected Claims 1-8, 11-13, and 30-31 under 35 U.S.C. § 103(a) as being obvious over Philippoz *et al.* (WO 02/083794 A2; hereinafter "Philippoz PCT") and further rejected Claims 9-10 and 32 under 35 U.S.C. § 103(a) as being obvious over Philippoz in view of Vercesi *et al.* (U.S. Patent No. 6,068,922; hereinafter "Vercesi"). The International Publication Date of Philippoz PCT is October 24, 2002. The U.S. counterpart application to Philippoz PCT is U.S. Patent Application No. 09/833,456 (hereinafter "Philippoz US"), published on December 12, 2002, as U.S. Patent Application Publication No. 2002/0187291.

We declare that the presently claimed invention was reduced to practice in the United States prior to the publication date of Philippoz PCT (October 24, 2002) and Philippoz US (December 12, 2002). Further to this declaration, we attach signed notebook pages, with dates redacted, that demonstrate conception (Exhibit 1) and exemplify the reduced to practice invention (Exhibit 2).

As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I

Ser. No. 10/809,470
Docket No. AD7006 USNA

also declare that all statements were made with knowledge that willful false statements, and the like, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and any such willful false statements may jeopardize the validity of either the patent application or any patent issuing thereon.

Respectfully Submitted,

Steven M. Hansen

Date

Sam Luis Samuels

Date

Richard Allen Hayes

Date

Arnold Frances 8/13/08
Arnold Frances
e

Date

Exhibit 1

TITLE New Product/Process Concept

DATE [REDACTED]

E 101615- 98

PURPOSE Document idea

Sam L Samuels

SEND INFO TO TBLISS
EMAIL: TBLISS@POTTERANDERSON.CO
PHONE: 778-6173 825 7/17/0

To: Arnie Frances/AE/DuPont@DuPont
cc: Megan A OBrien/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont
Subject: Re: Kevlar in PET resins

The specific concept I had proposed here was to mill/produce Kevlar® nanopulp in ethylene glycol and use this material as monomer feed to the polymerizer, thus directly incorporating the pulp in the resultant resin. The well dispersed nanopulp, even at low loadings, ought to improve some property of the resin (e.g. scratch, impact, fatigue resistance), making it a premium product for niche markets. This is not the same thing as putting Kevlar® pulp into PET resins by traditional methods -- although there might be some value in that too.

For either option, I suggest that you are the correct contact in AFS. If there's anything I can do to facilitate the interaction between Crystar® (P&IP) and AFS, please let me know.

Regards,
Sam

Megan A OBrien

Megan A OBrien

NO WRITING UNDER INSERT

To: Arnie Frances/AE/DuPont@DuPont
cc: Sam L Samuels/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont, Megan A OBrien/AE/DuPont@DuPont
Subject: Kevlar in PET resins

Hi Arnie,

My name is Megan O'Brien and I'm the Market Development Manager in Crystar(R) polyester resins. I also lead the top line growth through innovation for our business and just held an idea session last week.

Sam Samuels was in the meeting and he said you're interested in finding places where you can sample Kevlar(R) particles with other base polymers. At present, we can incorporate Teflon(R) and Surllyn(R) particles into our PET resins and I wanted to see if there was an opportunity to do the same with Kevlar(R).

I've copied our Technology Manager, Ken Atwood, on the note and Sam said he would be interested in helping if he could as well.

Appreciate your thoughts.

Megan O'Brien
440-877-0788

EXPERIMENTER

SSS

DATE

[REDACTED]

WITNESSED BY

Don C. Mun

DATE

[REDACTED]

Exhibit 2

D-289

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [redacted] Author: HANSEN Cost Code: 94-021 DRT 2-018-1

Object of Test PET w/ 0.05% K₂O/lr

Operator (8-4) (4-12) 42. Sugg (12-8) L. S.

MONOMER CYCLE

[illegible]

KP-8				Ingredients Added		Time	Ingredients Removed	
DMT	2C	Cat.	NO.	Inhibitor	Test Ingredients		MeOH	2C
Time	1900	1900	1900					
Amount	40 #	26 #	42.6 G			2600/Avulon (1853)	2240	2235
Time Batch decreased to						1 #	5400	500

Time Batch dropped to Clave..... Press on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Limits													
Batch Temp.	280		2250	1350	0050	0150		0355						
Clave Pressure			268	272	280	279		265						
Agitator RPM			D.T.	D.T.	D.T.	2.2		—						
Air Pressure			12	12	12	3		725						
Ext. Valve			37	27	27	20		—						
Ext. Nozzle			250	280	280	286		280						
Vapor Take-off			290	291	291	291		290						
Clave Dow Vent			284	292	258	297		276						
Vapor Take-off Flange			296	303	302	304		293						
			294	302	305	304		292						
			286	293	293	292		274						

Valve to Instr. Line Closed..... (check). Time Extrusion started 0.135; completed 0.230

Total Polymer Extruded..... Cut Piece 36.0 lbs Waste 2.2 lbs

Sample No's: Beginning, RV, Middle, RV, End, RV, Desired RV

RUNNING LOG

RUNNING LOG

Time	
1900	Changed still and began heat on.
2130	Reed set point on still to keep Mach. to come off.
2220	Mach. stop coming off switched to 2g cycle.
2235	2g cycle completed, preparing to drop batch to close.
2250	Batch in close, started agit. and D.T.
0110	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0120	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0125	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0130	Air pressure at 20 PSI, preparing to drop batch.
0230	Completed gassing batch, Close draining, sample to lab.
0240	Blow tag, blow Bald Temp, put Close under vac.
0355	Changed 30 lbs of 2g for CBO, set agitator at 12 RPM, took parcel.
0515	Extended CBO, blow Bald Temp, put Close under vac.
0615	Checked leak rate at 14.4 mm/hr.
0720-0725	158.7
0800	Batch - 2A still on - 12.00 C/4g

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 844-0511 DRT: 2-018-2

Object of Test PET W/ 0.05% KEVLAR

Operator (8-4) 845 (4-12) W. Segg (12-8) L.S.

MONOMER CYCLE

[illegible]

RP-8				Ingredients Added		26 W/KEVLAR (1.53)	Ingredients Removed	
	DMT	2G	Cat.	TIO.	Inhibitor	Test Ingredients	MeOH	2G
Time	0630	0630	0630			0630	0955	0915
Amount	40 lbs	26 lbs	42.6 CL			1 lbs	600	500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MoOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol		Test Kindly									
			0936	1030	1130	1215		1455			
Batch Temp.			264	271	279	278		254			
Clave Pressure			D.T	D.T	D.T	2.6		-			
Agitator RPM			12	12	12	3		12			
Air Pressure			27	27	26	21		-			
Ext. Valve			280	280	279	279		279			
Ext. Nozzle			291	291	291	290		291			
Vapor Take-off			282	290	296	295		282			
Clove Dow Vent			281	289	304	272		269			
Vapor Take-off Flange			291	299	303	306		295			
			283	289	294	288		283			

Valve to Instr. Line Closed..... (check). Time Extrusion started 1230; completed 1320

Total Polymer Extruded 30.0 Cut Flake 22.4 Waste 7.6

Sample No's.: Beginning....., RV..... Middle....., RV..... End....., RV..... Desired RV.....

Three

RUNNING LOG

0635 Charged ingredients to still, turned on heat, took patrol.
 = 8:20:32. BPT
 0800 Batch in Still on main cycle
 0855 main cycle complete, process Temp At 213°C. will Switch to 26 cycle
 0915 26 cycle complete, preparing to drop batch to Clave.
 0930 Batch to Clave. Started D.T. And Agitator took patrol Heat OFF Still
 1156 Air Pressure At 35 PSI. Lowered Agit Speed to 9 RPMs
 1200 Air Pressure At 35 PSI. Lowered Agit Speed to 6 RPMs
 1210 Air Pressure At 30 PSI. Lowered Agit Speed to 3 RPMs
 1215 Air Pressure At 21 PSI. Lowered Agit to Idle preparing to Empty
 Batch
 1336 Completed Casting Batch Clave Draining.
 1420 Blew Hot & Cold Traps, Clave Under VAC. had problem closing VAPOR Line Valve.
 1435 Charged Ciba to Clave
 1645 Extended R.O. Blow cold traps & put Clave under Vacs. (BU empty)
 1840 Checked leak rate @ 4.8 mtorr/hr

"Dacron" Research Laboratory POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 8114051 D.R.T. 2-019-1Object of Test: PET w/ 0.1% KevlarOperator (84) W. Sugg (412) W. Sugg (128) L.S.

MONOMER CYCLE

Patrol	Test Limits												
			1900	2000	2100	2250							
Batch Temp.			44	167	193	226							
Bot. Col.			36	124	170	174							
Top Col.			27	74	111	92							
Drop Line			262	233	242	288							
Drop Valve			223	202	201	239							
MeOH Rec. Level			0	0	4800	08							
2G Rec. Level			0	0	0	500							
Still Dow Vent			31	30	31	31							
			279	278	277	280							

	DMT	2G	Cat.	TiO ₂	Inhibitor	Test Ingredients	MeOH	2G
Time	1900	1930	1900			1900	2135	
Amount	40 lb	36 lb	42.6 lb			2.2 lb	6200	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty..... (check).

AUTOCLAVE CYCLE

Patrol	Test Limits												
			2200	2300	2400	2550							
Batch Temp.			269	277	298	279			270				
Clave Pressure			0.5	0.5	0.5	2.7			—				
Agitator RPM			12	12	12	3			12				
Air Pressure			27	28	28	22			—				
Ext. Valve			280	280	280	280			281				
Ext. Nozzle			290	291	290	291			291				
Vapor Take-off			285	294	292	297			291				
Clave Dow Vent			285	301	291	300			294				
Vapor Take-off Flange			294	301	296	301			294				
			287	271	287	290			284				

Valve to Instr. Line Closed..... (check). Time Extrusion started 0255; completed 0200Total Polymer Extruded..... Cut Flake 31.8 162 Waste 1.5 162

Sample No's.: Beginning..... RV..... Middle..... RV..... End..... RV..... Desired RV.....

Time RUNNING LOG

1900	Changed still & turned heat on
2135	Mon cycle completed, awaiting 2G cycle.
2150	2G cycle completed, preparing to drop batch to Clave.
2200	Batch in Clave, started agit. and D.T.
0225	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0235	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0245	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0250	Air pressure at 22 PSI, preparing to extend batch.
0300	Completed pasting batch, Clave draining.
0315	Completed blowing feed, blowing cold traps, and puffing Clave under vac.
0330	Changed 30 ml of 2G for CBO, ppt. at 12 cm, kept control.
0445	Extended CBO, blew cold traps, put Clave under vac.
0600	Checked leak rate at 9.6 mm/hr.

"Dacron"* Research Laboratory
POLYMER BATCH UNIT.

Date Started: [REDACTED] Author: HANSEN Cost Code: 914-0251 D.R.T. 2-09-2
Object of Test PET W/ 0.1% KEVLAR
Operator (84) PHH (412) (12-8)

MONOMER CYCLE

[illegible]

RP-8				Ingredients Added		2G	4/11/94 (1.858)	Ingredients Removed	
	DMT	2G	Cat	TIO	Inhibitor		Test Ingredients	MeOH	2G
Time	0620	0620	0620				0620	0820	0825
Amount	40 gr	26 gr	426 gr				2.2 lbs	1000	500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.
McOH Receiver valve OPEN when vessel is empty..... (check).

AUTOCCLAVE CYCLE

[illegible]Valve to Instr. Line Closed..... (check), Time Extrusion started 11:30; completed 11:30

Total Polymer Extruded 30.0 Cut Flare 29.2 Waste 1.8

Sample No's: Beginning RV, Middle RV End RV Desired RV

Time

RUNNING LOG

0620	Changed ingredients to Shell
0625	Turned on agit and heat, took Patrol,
0830	MODH cycle Comp. Switched to 25 cycle.
0835	25 cycle Comp. Preparing to Drop Batch,
0845	Batch in Close - Started DT. Started agitation @ 12 RPM.
1100	Process @ 35 PSI, Lowered to 8 RPM's.
1120	Process @ 35 PSI, Lowered to 6 RPM's.
1125	Process @ 30 PSI, Lowered to 3 RPM's.
1130	Process @ 20 PSI, Preparing to Expand Batch.
1230	Comp Casting. Close draining.
1320	Slow CT. & Heat. Close under Vac.
1430	Clg 30" 25 to Close to 090, agitation @ 12 RPM.
1530	Expanded 090, Slow CT. Close under Vac.
1730	Checked leak rate @ 2.0 mcf/hr.

* Trademark for du Pont polyester fiber.

Operator (8-4) (4-12) *W. Sugg* (12-8) *L.S.*

Patrol	Test Limits	1800	1900	2000	2100					
Batch Temp.		47	174	196	206					
Bot Col		48	147	177	153					
Top Col		44	87	129	101					
Drop Line		277	246	255	292					
Drop Valve		289	223	228	240					
MeOH Rec. Level		0	500	5800	855					
2C Rec. Level		0	0	0	500					
Still Dow Vent		31	30	31	31					
		281	277	277	277					

Kp-8				Ingredients Added		JG W/ Kevlar (2.272)		Ingredients Removed	
	DMT	2G	Cc	NO.	Inhibitor	Test Ingredients	MeOH	2G	
Time	1800	1800	1800			1800	2005	2020	
Amount	40#	26#	42.6 cc.			8.8 lbs	6200	500	

MeOH Receiver valve OPEN when vessel is empty.....(check).

[illegible]

Sample No's: Beginning RV Middle RV End RV Desired RV

1800	Charged still and turned belt on.
2005	Most cook comp. switched to 2G cycle.
2020	2G cycle comp. preparing to drop batch to chive.
2025	Batch in chive started agit. and PT.
2245	Min. pressure @ 35 PST. Lowered agit. to 2 RPM.
2300	Min. pressure @ 35 PST. Lowered agit. to 6 RPM.
2305	Min. pressure @ 34 PST. Lowered agit. to 3 RPM.
2310	Min. pressure @ 30 PST. Preparing to extend batch.
2400	Completed cooking batch. Plant draining.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☒ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:**

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.